Radio Basics
How to Choose Your First Radio

Session 02

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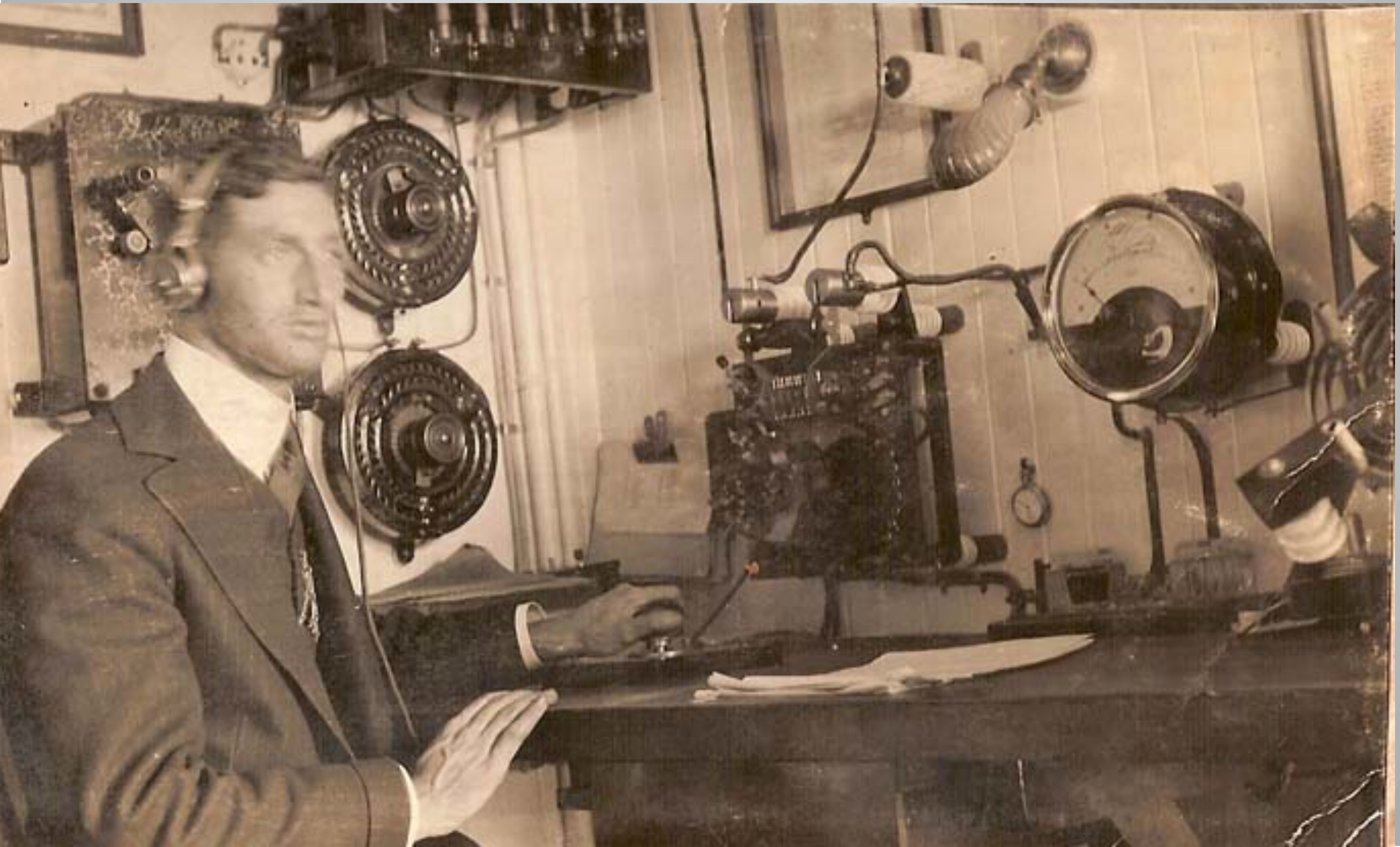
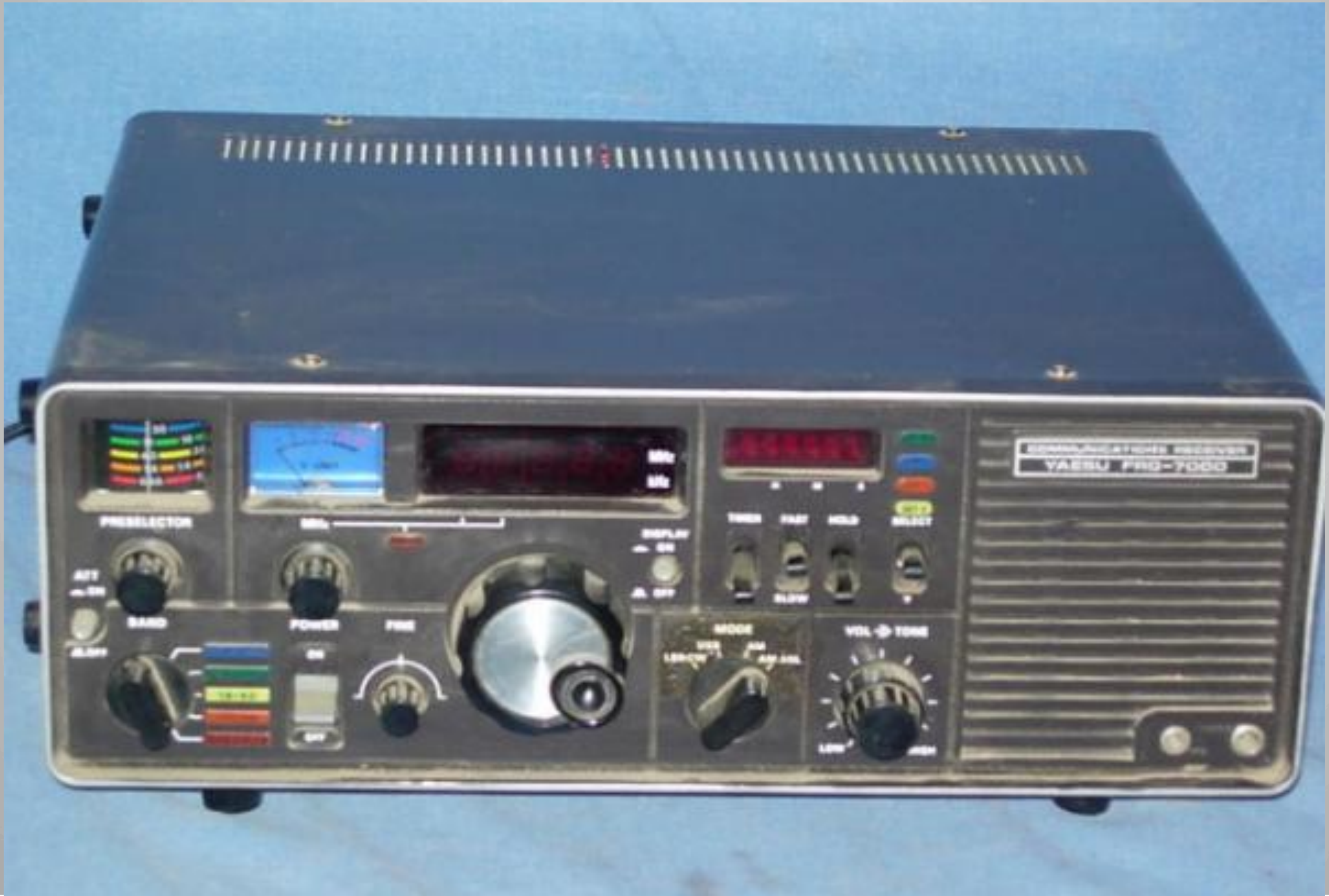
Shiny and New?

Or not so much……



Maybe Something In-Between?



Regardless…….

Now that you have your ham license, you are probably looking for a good radio to serve your needs. So take a minute and think about what your aspirations for you are in this hobby.

Straw poll time!!!

Considerations

- What do you want to ‘get out’ of the hobby?
- Occasional operator?
- Public Service Oriented?
- Contesting?
- Fixed, Mobile or Portable?
- Apartment, Covenant-restricted, Rural?
- VHF, UHF, HF, Satellite?
- How much are you willing to invest?

New vs Used

Benefits of Used

More bang for buck

More ‘track record’

Might get from friend

Problems with Used

Might inherit problems

Not latest technology

Might not be friend for long!

Usually no warranty

New vs Used

Benefits of New	Problems with New
Latest technology	No track record
Normally a warranty	Usually more expensive
More accessories	Non-trans warranty
Newer rigs smaller	Smaller not always best
Feature set better	Beware of ‘knock-offs’!

Research Before You Buy!!!

- QRZ.COM
- eHam.net
- CQ-amateur-radio.com
- Arrl.org
- Various Yahoo Groups
- Retail sites such as universal-radio.com, hamradio.com, aesham.com, texastowers.com and others!

Mobile vs Handheld vs Base

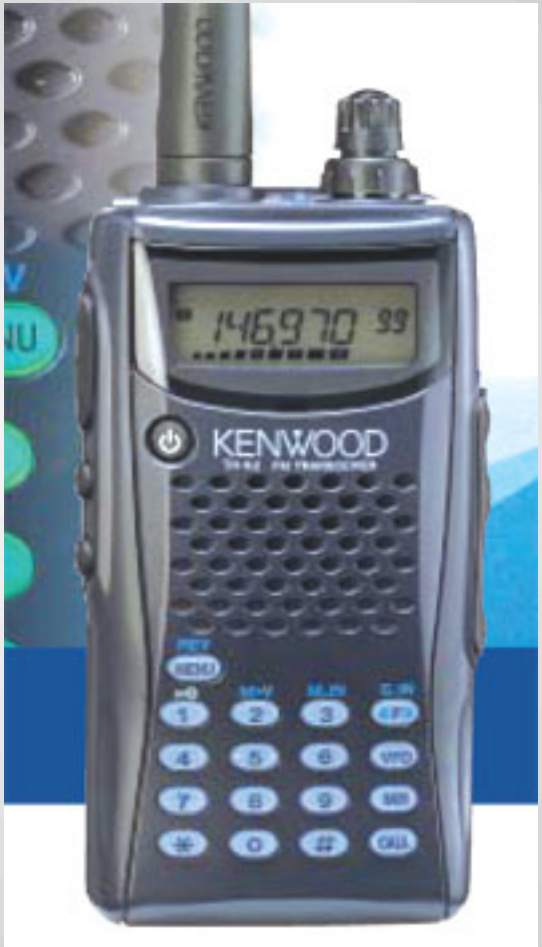
- How do you envision operating?
- Can you afford several types?
- In General
  - HT’s have lowest power, but most utility
  - Mobiles can be used as a base with power supply
  - Most Base rigs are also transportable
  - HT’s can be connected to an amp for more power
  - So can mobiles
  - So can bases!! (Are you seeing a pattern here?)

Let’s Consider Handi-talkies

- Mono banders normally least expensive
- Most have a 5 Watt output
- Dual banders probably the most popular
  - Dual receive (more expensive)
  - Single receive (can be competitive with mono-banders)

Some Current Models
In the $120 - 140 range

Icom IC-V82



Kenwood TH-K2AT

Yaesu VX-170

Higher End HTs
In then $300-500 range

⌘

FM Mobiles

- Probably the main-stay of VHF-UHF operations
- More power than an HT
- Can be used mobile, base or transportable with the appropriate power source
- Can be cost-competitive with HTs
- Easier to read displays than HTs
- Usually more features and capabilities
- Normally FM only

Some FM Mobiles
Basic to My, Oh MY!!

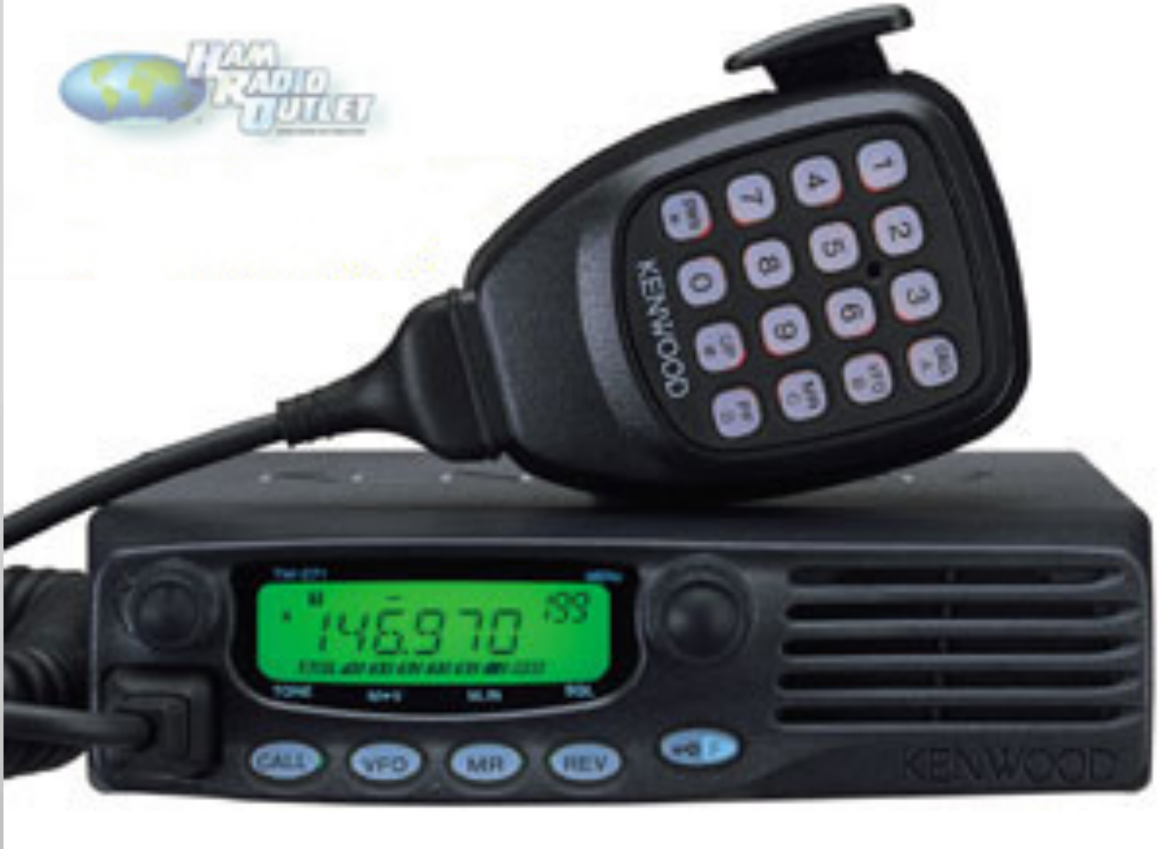
Icom's IC 2200H D-Star Upgradeable

Somewhat of a bargain in the $125.00 range

True Dual band operations
In the sub-$600 range

- Icom's D-Star Up-gradeable IC-2820

Kenwood's Base mobile in the mid-$150 range



High-end Kenwood
with built-in TNC, APRS
In the mid-$500s

Let's Not Forget Yaesu – Vertex Basic 2-meter for $125!

Quad-Band Operations (Two at a time) for under $400!

- FT-8900R 29,50,144,430 FM operations

A bit about specifications

- GENERAL
- Frequency Range: RX: 108.000 - 520.000 MHz,
- 700.000 - 999.995 MHz (Cellular Blocked)
- TX: 144.000 - 146.000 MHz (or 144.000 - 148.000 MHz),
- 430.000 - 440.000 MHz (or 430.00 - 450.000 MHz)
- Channel Steps: 5/10/12.5/15/20/25/50 kHz
- Modes of Emission: F3, F2
- Antenna Impedance: 50 Ohms, unbalanced (Antenna Duplexer built-in)
- Frequency Stability: ±5 ppm @ 14° F ~ +140° F (–10 °C ~ +60 °C)
- Operating Temperature Range: –4° F ~ +140° F (–20 °C ~ +60 °C)
- Supply Voltage: 13.8 VDC (±15%), negative ground
- Current Consumption (Approx.): RX: 0.5 A (Squelched)
- TX: 8.5 A (144 MHz), 8.0 A (430 MHz)
- Case Size (W x H x D): 5.5” x 1.6” x 6.6” (140 x 41.5 x 168 mm)
- (w/o knobs & connectors)
- Weight (Approx.): 2.2 lb (1 kg)
- TRANSMITTER
- Output Power: 50/20/10/5 W (144 MHz),
- 35/20/10/5 W (430 MHz)
- Modulation Type: Variable Reactance
- Maximum Deviation: ±5 kHz
- Spurious Radiation: Better than –60 dB
- Microphone Impedance: 2 kΩ
- DATA Jack Impedance: 10 kΩ
- RECEIVER
- Circuit Type: Double-conversion superheterodyne
- Intermediate Frequencies: 45.05 MHz/450 kHz (Left band),
- 47.25 MHz/450 kHz (Right band)
- Sensitivity (for 12dB SINAD): Better than 0.2 µV
- Squelch Sensitivity: Better than 0.16 µV
- Selectivity (–6dB/–60dB): 8 kHz/30 kHz
- Maximum AF Output: 2 W @ 8 Ω for 5% THD
- AF Output Impedance: 4-16 Ω
- Specifications are subject to change without notice, and are guaranteed within the 144 and
- 430 MHz amateur bands only. Frequency ranges will vary according to transceiver version;
- check with your dealer.

Some specs ARE more important

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More on specs

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What about the antenna?

- HTs: Rubber Duckie = Dummy Load
- Mobiles: Buy a good antenna
- Magnetic mounts okay, not as good as permanent mounts
- Center of metal mass tends to be best
- Aesthetics (the XYL) will likely dictate placement!

Okay… More Toys – The “Sound to Light” boxes

The Icom 706 series. One of the most successful lines in amateur history – and the original!

Icom’s current SOTA Rig

- The IC-7000 has IF DSP and a host of cutting edge features. In the $1200-1300 range

Kenwood does STL Bigger

Kenwood's 'box' does STL, PLUS has a built-in antenna tuner AND a TNC. In the $1600 range it is competitive if you consider the features.

Yaesu's STL boxes emphasize being PORTABLE!

The wildly popular FT-817 series has five watts of output, is easily transported. Internal battery - a host of accessories… for $550-ish

Marketed as the “ARES” radio

Innovative ability to install tuner, power supply or batteries inside the radio, big but more powerful than the 817 series. A good compromise radio for home and portable operations….and around $800 new

Entry HF

Icom’s IC-718. Audio DSP. Good performance for not much more than an SWL rig. Typically in the low $600s

Kenwood's Entry HF

At around $1160, but includes 6 Meter operations, a remote face plate and built in auto-tuner!

Don’t forget Yaesu!

- The fairly new FT-450AT has a built-in auto-tuner, IF DSP and a very compact size. Sells for about $850!

Other things to consider for HF

- HF Rigs also require some of the following:
- A power supply
- An antenna tuner (if not built in)
- A fairly substantial antenna (when compared to a VHF or UHF rig)
- Depending on your intentions, automatic keyer or straight key, sound card interface, computer, coax, etc.

A VERY short antenna primer…

- Antennas are grouped in four basic catagories:
  - Verticals Less money than beams on average
  - Beams Typically most expensive (towers, etc)
  - Wire Usually the least expensive
  - Dish For Microwave frequencies

Verticals

- Includes ground planes and mobile antennas
- Common for VHF and UHF base stations
- Can be ground-mounted for HF work
- Can be phased to give some directionality
- There are cheap ones and expensive ones
- Need to consider carefully whether a vertical is right for you or not

Beams

- Best directionality
- Satellite work
- Point to point (repeater links)
- HF beams are large, typcially require a tower and a rotator
- The complete install can be very expensive

Wire antennas

- Most commonly used on HF
  - Require at least two support points
  - Work better higher off the ground
  - Can be somewhat directional but not as much as a beam
  - Fun to experiment with and a cost effective way to enjoy HF operation without a lot of investment

Great… so where do I buy?

Where to buy depends on if you are wanting to go new, used or some mix of the two. For new gear, a simple Google search will turn up the names of a number of Amateur Radio Dealers that sell online as well as from a Store Front. Most used gear sales are done over the internet, flea markets, or by word-of-mouth from fellow hams.

Some of the new dealers

- Ham Radio Outlet – www.hamradio.com
  - Closest store is in Portland
- AES – www.aesham.com
  - Nearest store is in Las Vegas
- Universal Radio – www.universal-radio.com
  - Has best site for New equipment information
- Texas Towers – www.texastowers.com
- Ebay – many dealers sell here www.ebay.com

Used Sources

- Most new dealers have some used/demo
- www.eham.net - extensive ham equipment
- www.qrz.com - almost as much as eham
- www.ebay.com new and used – LEARN FIRST!
- www.arrl.org - has limited classified listings

When buying used or at auction, do your research before bidding. Know what an item is worth and consider ramifications.

Thanks for your attention….

And welcome to amateur radio. Enjoy your time here!

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